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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/822,311 | 04/02/2001 | Shuji Hitomi | Q63901 | 7349 |

7590 01/14/2005

SUGHRUE, MION, ZINN, MACPEAK & SEAS, PLLC
2100 PENNSYLVANIA AVENUE, N.W.
WASHINGTON, DC 20037-3213

EXAMINER

HODGE, ROBERT W

| | |
|----------|--------------|
| ART UNIT | PAPER NUMBER |
|----------|--------------|

1746

DATE MAILED: 01/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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|------------------------------|--------------------------------------|--------------------------------------|--|
| Office Action Summary | Application No. 09/822,311 | Applicant(s) HITOMI, SHUJI | |
| | Examiner Robert Hodge | Art Unit 1746 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 March 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) 9-13, 16 and 17 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8, 14 and 15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>3/28/03</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 3/24/04 have been fully considered but they are not persuasive because they are not commensurate with the scope of the claims. The applicant freely admits in his arguments that any gas diffusion layer includes pores. Therefore the addition of the recitation "having pores in its material" related to the porous polymer is redundant, since the pores would already exist as admitted to by the applicant.
2. The examiner notes that as written the claims read on any conventional electrode assembly. If the pores were not present then mass transport could not occur and thus the reaction for the fuel cell would be inhibited and no electrochemical activity would occur.
3. Therefore it is the examiner's position that the previous rejections over the prior art was proper and will be maintained.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-3, 5, 6, and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Paganin et al, Journal of Applied Electrochemistry (1996). (Paganin). Claim 1 is

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directed to an electrode for a fuel cell including a catalyst layer and a gas diffusion layer.

The gas diffusion layer includes a porous polymer containing electro-conductive filler.

The same is disclosed in the first column of page 297. Platinum is construed as the conductor.

6. As to claim 2, disclosing that gas diffusion layer further comprises an electro-conductive backbone in which said porous polymer is applied. Paganin discloses that the polymer is mixed with the Pt/C catalyst.

7. As to claim 3, further limiting claim 2 and disclosing that the electro-conductive backbone comprises an aggregate of carbon fibers, carbon cloth is disclosed in Paganin, inherently the carbon cloth includes carbon fiber.

8. As to claim 5, further limiting claim 2 and disclosing that the electro-conductive filler comprises a carbon particle. The disclosure of Pt/C filler includes a carbon particle.

9. As to claim 6, further limiting claim 2 and disclosing that the porous polymer comprises a fluoropolymer, Paganin, in the Experimental section discloses using PTFE (a fluoropolymer) as the porous fluoropolymer.

10. As to claim 14, disclosing a fuel cell comprising an electrode the same is disclosed at page 297 of the Paganin reference.

11. Claims 1-8 and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by United States Patent No. 5,085,743 Reddy et al (Reddy).

12. As to claims 1-3 and 5, disclosing an electrode comprising a catalyst layer (see e.g. column 3, line 44 *et seq.*) comprising catalyst particle (preferably gold) and a gas

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diffusion layer comprising a porous polymer containing an electro-conductive filler, such as carbon particles (preferably carbon fibers).

13. As to claim 4, disclosing that the electro-conductive filler comprises a chopped carbon fiber, the same is disclosed at e.g. column 6, line 40 *et seq.*

14. As to claims 6 and 7, disclosing that said fluoropolymer comprises a polyvinylidene fluoride the same is disclosed by Reddy. See e.g. column 9, line 1 *et seq.*

15. As to claim 8, disclosing that the gas diffusion layer has a porosity of from 45% to 95%, the same is disclosed at see e.g. column 7, line 41 *et seq.* see especially line 66 *et seq.* Also see e.g. column 7, line 2 *et seq.*

16. As to claim 15, further limiting claim 8 and disclosing a fuel cell including the electrode of claim 8. The same is disclosed at e.g. column 11, line 60 *et seq.* especially at see e.g. column 12, line 1 *et seq.*

Conclusion

17. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

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extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert Hodge whose telephone number is (571) 272-2097. The examiner can normally be reached on 8:00am - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr can be reached on (571) 272-1414. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

RWH 1-10-05


Jonathan Crepeau
Primary Examiner
Art Unit 1746